Photocatalytic Nanostructuring of Graphene Guided by Block Copolymer Self-Assembly - DTU Orbit (09/11/2017)

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Nanostructured graphene exhibits many intriguing properties. For example, precisely controlled graphene nanomeshes can be applied in electronic, photonic, or sensing devices. However, fabrication of nanopatterned graphene with periodic supperlattice remains a challenge. In this work, periodic graphene nanomesh was fabricated by photocatalysis of single-layer graphene suspended on top of TiO2-covered nanopillars, which were produced by combining block copolymer nanolithography with atomic layer deposition. Graphene nanoribbons were also prepared by the same method applied to a line-forming block copolymer template. This mask-free and nonchemical/nonplasma route offers an exciting platform for nanopatterning of graphene and other UV-transparent materials for device engineering.

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